

CENTRAL ASIAN JOURNAL OF THEORETICAL AND APPLIED SCIENCES

Volume: 03 Issue: 08 | Aug 2022 ISSN: 2660-5317
<https://cajotas.centralasianstudies.org>

Enumeration on Therapeutic and Ethnopharmacological Properties of Adosa [Adhatoda Vasica (L.) Nees]

Dilip Kumar Sharma

Director, Regional Centre, Vardhman Mahaveer Open University (VMOU), Rawatbhata Road, Kota, Rajasthan, India

Vinod Kumar Jain

Poddar International College, Jaipur, Rajasthan, India

Received 24th May 2022, Accepted 13th June 2022, Online 20th Aug 2022

Abstract: *Adosa (Adhatoda vasica) is an important medicinal plant widely used in Unani system of medicine of (Family-Acanthaceae). The leaves of Adhatoda vasica contain several biologically active phytochemicals such as alkaloids, tannins, saponins, phenolics and flavonoids. It mainly consists of pyrroquinazoline, alkaloids, viz. vasicine, vasicol, vasicinone, peganine along with other minor constituents. The plant possesses diverse pharmacological activities, In Unani system of medicine, the drug is described as having dafa-e-tashannuj (anti-spasmodic), qatil-e-jarasim (antibiotic), mukhrij-e-balgham (expectorant), dafa-e-humma (antipyretic) properties due to which it is prescribed in a wide range of ailments like influenza, tuberculosis, bronchitis, gastric ulcers etc. Leaf juice is beneficial in the treatment of dysentery and diarrhoea. Various other activities like radio modulation, hypoglycaemic effect, cardiovascular protection, antitubercular, antiviral, hepatoprotective and antioxidant activity have also been reported..*

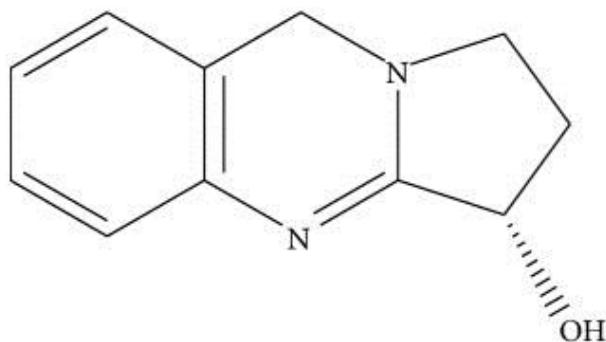
Keywords: *Adhatoda vasica, medicinal, ethnopharmacological, therapeutic, enumeration, ailments, constituents.*

Introduction

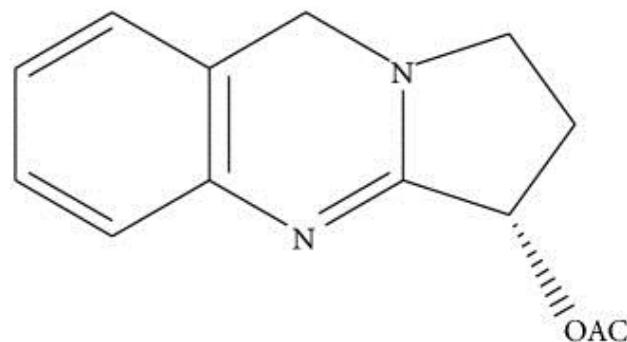
Secondary metabolites obtained from traditional medicinal plants are known to play immortal roles in ancient and modern medicinal system. These compounds are ecofriendly and act as versatile source of agrochemicals and other drugs. Further, these compounds have shown numerous biological activities such as antiseptic, anti-asthmatic, diuretic, antispasmodic, antipyretic, diaphoretic, analgesic, sedative, fungicidal, herbicidal, insecticidal, insect repellent etc. So, in the present times new and efficient methodologies are needed to be developed for the production of drugs and agrochemicals of botanical origin. *Adhatoda vasica* commonly known as Vasaka in Ayurveda belongs to family Acanthaceae. [1,2] This plant has been used in the indigenous system of medicine in India for over 2000 years. *A. vasica* is a

good source of pyrroloquinazoline alkaloids such as vasicine, vasicol, adhatonine, vasicinone, vasicinol, vasicinolone etc., which are the chief constituents of different extracts of the plant. These compounds have shown many biological and pharmacological activities viz. anti-malarial, anti-inflammatory, antioxidant, antidiabetic, anti-bacterial, anti-cancer etc. Further, *Adhatoda* leaves have been used extensively in Ayurvedic medicine for the treatment of diarrhea, dysentery, tuberculosis, skin diseases, vomiting and leprosy etc.

Adhatoda vasica (L.) Nees is a well-known plant drug in Ayurvedic and Unani medicine. It has been used for the treatment of various diseases and disorders, particularly for the respiratory tract ailments. During the last 20 years, several scientific reports on oxytocic and abortifacient effects of vasicine and alkaloid derived from the plant have appeared. This leads to questions concerning the safety of *A. vasica* as a herbal medicine. The data have been evaluated from the point of view of correctness, reliability, relevance and importance for the overall evaluation of the safety of *A. vasica*.



1



2

Structure of the compounds: (1) Vasicine and (2) Vasicine acetate.

Vasicine acetate was obtained by acetylation of Vasicine recovered from *A. vasica* leaves. Vasicine acetate showed moderate antibacterial activity compared to Vasicine.

Adhatoda vasica has been used for the treatment of various diseases and disorders. It is a primary medicinal plant for the respiratory tract ailments in the treatment of cough, bronchitis, asthma and symptoms of common cold. Constituents of the plant have been exposed to have antistress effects, which might be occasioned partly by an endocrine and partly by an immunomodulatory mechanism of action. This plant is a source of Vitamin C and has medicinal uses, mainly antispasmodic, fever reducer, anti-inflammatory, anti-bleeding, bronchodilator, anti-diabetic, disinfectant, anti-jaundice and oxytocic. It is antiperiodic, astringent, diuretic, purgative and is also used as an expectorant in addition to liquefy sputum. The leaves, flowers and roots of this plant used in herbal drugs against tubercular activities cancer and possessed anti-helminthic properties. The source of the therapeutic drug 'Vasaka' is considered for its indigenous system of medicine. It contains various therapeutical properties including cardiovascular protection, ant tubercular, antiulcer, antiasthmatic, hepatoprotective, antibacterial, antitussive, ant mutagenic, antibacterial, abortifacient[3,4]

Discussion

Vasaka is a well-known herb in indigenous systems of medicine for its beneficial effects, particularly in bronchitis. Vasaka leaves, bark, the root bark, the fruit and flowers are useful in the removal of intestinal parasites. Vasaka herb is used for treating cold, cough, chronic bronchitis and asthma. The decoction of its root and bark in doses of 30 grams twice or thrice a day for 3 days can be given for this purpose. The juice

of its fresh leaves can also be used in doses of a teaspoon thrice a day for days. In acute stages of bronchitis, vasaka gives unfailing relief, especially where the sputum is thick and sticky. It liquefies the sputum so that it is brought up more easily. For relief in asthma, the dried leaves should be smoked. In Ayurveda, a preparation made from vasaka flowers, known as gulkand is used to treat tuberculosis. The juice from its leaves should be given in doses of 2 to 4 grams in treating diarrhea and dysentery. A few fresh petals of vasaka flowers should be bruised and put in a pot of china clay. Some sugar crystals are added and the jar kept in the sun. It should be stirred every morning and evening. The preserve is ready for use in about a month. A poultice of its leaves can be applied with beneficial results over fresh wounds, rheumatic joints and inflammatory swellings. A warm decoction of its leaves is useful in treating scabies and other skin diseases. In olden times its leaves were made into a decoction with pepper and dried ginger. But the modern medicine searched its active ingredients and found out that vasicine, oxyvasicine and vasicinone are the alkaloids present in vasaka and in which vasicine is the active ingredient for expelling sputum from the body. Vasaka, also called Malabar nut tree, is well known throughout India. It is tall, with several branches, dense, and an evergreen shrub. Leaves are large and lance-shaped. It has capsular four seeded fruits. The flowers are either white or purple in colour. Its trade name vasaka is based on Sanskrit name. Vasaka is indigenous to India. It grows all over the India and in the lower Himalayan ranges. [5,6] The leaves contain an alkaloid vasicine besides an essential. In Ayurvedic medicine, malabar nut (*Adhatoda vasica*) has been used for a multitude of disorders including; bronchitis, leprosy, blood disorders, heart troubles, thirst, asthma, fever, vomiting, loss of memory, leucoderma, jaundice, tumors, mouth troubles, sore-eye, fever, and gonorrhea. *Adhatoda vasica* is useful in treating bronchitis, tuberculosis and other lung and bronchial disorders. A decoction of the leaves of Vasaka may be used to help with cough and other symptoms of colds. The soothing action helps irritation in the throat and the expectorant will help loosen phlegm deposits in the airway. A poultice of the leaves of Vasaka may be applied to wounds for their antibacterial and anti-inflammatory properties. The poultice is also helpful in relieving rheumatic symptoms when applied to joints. Vasaka has been used to control both internal and external bleeding such as peptic ulcers, piles and bleeding gums. Vasaka exhibits antispasmodic, expectorant and blood purifying qualities. *Adhatoda Vasaka* is a very well known remedy available everywhere and it is especially popular in rural areas. Acknowledging its medicinal properties, it has been adopted by modern medical practitioners also. This bush grows in all parts of the world and the bark, flowers, roots and leaves are used in medicine. The leaves enjoy a reputation as a useful remedy in the cure of coughs and bronchitis. The plant has pungent and astringent taste. It is cold in action. It normalizes kapha and pitta and improves the voice. It is useful in ridding the patient of coughing and asthma and can be given as a cure in any disease with which these symptoms are associated. It is beneficial to the tuberculosis patient. Vasaka's special virtue is stopping bleeding due to the aggravation of pitta, through the mouth, nose, genitals, or the urinary systems. The leaves are dampened and then pounded, and one teaspoon of the resultant juice is useful in cases of chronic bronchitis, asthma and tuberculosis. This is not to say that it always cures all these diseases but it does give immediate relief. Being a very good expectorant, it draws out all kapha (phlegm) accumulated in the lungs. In many cases where bronchitis is due to lack of appetite and poor digestion, the juice of Vasaka is mixed with the juice of ginger and honey and given in the early morning on an empty stomach. Given in the early stages of tuberculosis, the juice of Vasaka, thrice a day, helps a patient who is prone to incessant coughing. In many of the cough syrups that are available, Vasaka has been used either as a base or as an ingredient. Boiled and put on the bladder region, the leaves produce a diuretic action, reduce the swelling of the kidney and lead to clear urination. Persons suffering from bleeding piles or diarrhea, accompanied by bleeding, or women suffering from menorrhagia can take the juice of Vasaka 2 to 3 times a day to great advantage. Dried and powdered leaves also form a remedy for bronchitis in the dose of 40 grains twice a day. In liquid form the dose is about half to one teaspoon. In excessive doses of 1 to 2 ozs, an emetic action

results inducing vomiting in which all the kapha is removed. In ancient times the root of the Vasaka was tied on the back below the navel region and it is said that it produced safe, painless delivery. Vasa avaleha, useful in easing all sorts of coughs, especially in the case of asthma, and bronchial congestion, is made in the following manner: the juice of 1 seer of Vasaka leaves is boiled with $\frac{1}{4}$ seer of white sugar, 4 tolas long peppers and 4 tolas pure ghee, until the mixture is reduced to a jelly form. After cooling, $\frac{1}{4}$ seer of honey is added and the preparation is mixed thoroughly. The mixture is given in $\frac{1}{2}$ ounce doses. A liquid preparation of Vasaka known as Vasasav given in half ounce measures after the principal meals, reduces production of kapha (phlegm) and relieves excessive coughing. The juice of Vasaka leaves softens the bronchial tube. It is also useful in reducing aggravation of pitta and discomfort due to jaundice. The roots and bark possess a virtue well-known for their expectorant properties. If well-known patented expectorant remedies have failed to give you relief, by all means try this home remedy. Vasaka has also been used to speed delivery during childbirth.[7,8]

Results

How to Use:

The decoction of the root is useful in treating bronchitis, asthma, vomiting, sore eyes, fevers and gonorhoea. The decoction of the fruit also helps in taking care of bronchitis. The decoction of the leaves promotes menstrual flow and is useful in gonorrhoea. The decoction of the flowers purifies the blood and improves in circulation. It also checks painful and difficult urination and jaundice.

The decoction of the leaves and the roots of this plant is considered as a very efficacious remedy which is normally administered, along with ginger, for all sorts of coughs. The dried leaves are rolled into the form of cigarettes and smoked to cure asthma. The juice extracted from the leaves is used for diarrhoea and dysentery. The leaves, roots and especially the flowers are antispasmodic or have those qualities which prevent or cure spasms. The bitter juice from the leaves is administered in infusion to expel worms from the body. The fresh flowers are used in ophthalmia or the severe inflammation of the eye or conjunctiva.

Parts Used:

Stem Bark, leaves, root, and flowers

Taste:

Bitterness

Action:

Antispasmodic, expectorant, germicide, diuretic

Adhatoda Vasica (Vasaka) contains following active principles, which might responsible for its therapeutic properties.

1. Vasicine (quinazoline alkaloid)
2. Vasicine acetate
3. Vasicinone
4. Vasicinolone
5. 2-acetylene benzyle

It has following medicinal properties:

- Antitussive – relieves a cough
- Expectorant – promotes expectoration
- Bronchodilator – dilates bronchi
- Anti-bacterial
- Anti-microbial
- Anti-viral
- Anti-inflammatory – reduces inflammation of airways
- Antihemorrhagic (styptic) – checks bleeding
- Antioxidant
- Antispasmodic – Helps in abdominal spasms and relaxes muscles (its action is confirmed due to the presence of Vasicinone alkaloid in Vasaka)[9,10]
- Antifungal – Works against ringworm
- Mild Sedative – Calms the mind
- Anti-allergic – Fights off allergies
- Anthelmintic – Anti-parasite or removes worms
- Appetite stimulant – Improves appetite
- Mild Anti-hypertensive – Reduces blood pressure

Adhatoda Vasica (Vasaka) is helpful in following diseases.

1. Cough (with yellow thick sputum and fever)
2. Chronic cough due to Tuberculosis along with anti-tubercular medicines
3. Asthma (wheezing, breathing trouble and chest congestion)
4. Upper respiratory infections (with a fever and productive cough)
5. Common cold (with thick yellow discharge or along with secondary bacterial infection)
6. Chronic Bronchitis
7. Sinusitis
8. Sore throat
9. Throat pain
10. Throat Irritation
11. Tonsillitis (swelling or inflammation of tonsils with redness)
12. Throat ulcers
13. Excessive thirst
14. Nosebleed (epistaxis) – due to excess heat

15. Angina pectoris
16. Heart diseases (including high blood pressure)
17. Mild constipation
18. Dengue fever

Adhatoda Vasica is a drug of choice for respiratory diseases in Ayurveda. It is the main ingredient in every proprietary ayurvedic medicines used for a cough and asthma. It is a simple, easily available and safe herb, which gives relief from bacterial infections and throat problems.

The main action of this herb is observed on the respiratory system and circulatory system. Here are some clinical uses and health benefits of *Adhatoda Vasica*.

Cough

Adhatoda Vasica has potent antitussive properties. It gives relief from a cough. The effects in suppressing cough in animal studies found to be similar to codeine. (1)

In ayurvedic Medicine, *Adhatoda Vasica* is used when patient coughing up yellow thick sputum and has a fever, wheezing or difficulty in coughing up the sputum. Then the following herbal combination is given. [11]

Adhatoda Vasica Powder (Vasaka Churna)	2 grams
Sitopaladi churna	2 grams
Honey	1 teaspoon

The decoction prepared from *Adhatoda Vasica* leaves can also help in such cases. Its decoction reduces inflammation, cough, and wheezing and it eases in breathing.

Asthma

Adhatoda Vasica has anti-inflammatory characteristics. It helps in asthma and reduces inflammation of airways and lungs. (2, 3)

Furthermore, VASICINE compound found in *Adhatoda Vasica* is bronchodilator, which eases the breathing process and reduces wheezing due to asthma.

In Ayurveda, the following herbal combination is helpful for asthma.

Fresh <i>Adhatoda Vasica</i> leaf juice	5 ml
Fresh Ginger juice	2.5 ml
Honey	1 teaspoon

If you cannot prepare fresh formulation, then the following herbal formula of Vasaka can also help to reduce asthmatic attacks and ease breathing.

Adhatoda Vasica Powder (Vasaka Churna)	2 grams
Pushkarmool (Inula racemosa)	250 mg
Trikatu Churna	250 mg
Sitopaladi churna	2 grams
Honey	1 teaspoon

Upper Respiratory Infections

Adhatoda Vasica has antibacterial and antimicrobial properties. Therefore, it is helpful in a variety of bacterial infections of the respiratory system. (4, 5)

Vasaka is commonly used in Ayurveda for fever, upper respiratory tract infections, and cough. Many ayurvedic formulations used for this purpose contain it as a main ingredient. The most commonly used formulation is VASABLEHA (Vasavaleha). The following *A. Vasica* formulation is also helpful in the management of upper respiratory infections.

<i>Adhatoda Vasica</i> Powder (Vasaka Churna)	1 grams
Sitopaladi churna	2 grams
Mahasudarshan Churna	2 grams
Tulsi Churna (Holy Basil Powder)	1 gram
Honey	1 teaspoon

This works when the patient has yellow thick sputum, cough, fever, nasal congestion, wheezing etc.

Common Cold

Adhatoda Vasica has anti-viral medicinal property, which makes it effective in viral diseases. Ayurvedic doctors use it in the common cold when nasal discharge is yellow and thick. Generally, Vasavaleha is recommended in such condition, but the following Vasaka combination is also effective in such cases.

<i>Adhatoda Vasica</i> Powder (Vasaka Churna)	1 gram
Sitopaladi churna	1 gram
Punarnava Churna	1 gram
Trikatu Churna	125 mg
Honey	1 teaspoon

Sinusitis & Sinus Infection

As explained above, *Adhatoda Vasica* has antimicrobial and anti-inflammatory properties. (6, 7)

It reduces inflammation of sinuses and fights off infections. It reduces the blockage of sinuses and removes pus or fluid from them.[12]

Chronic Bronchitis

Adhatoda Vasica has antiseptic effects for bronchial tubes. It reduces the inflammation of bronchial tubes and reduces thickened mucus due to its expectorant effects. Vasaka clears the bronchial tubes and reduces a cough, production of sputum, fatigue, breathlessness and chest discomfort associated with bronchitis.

Bronchiectasis

Bronchiectasis is caused by chronic inflammation, which results in the failure to clear sputum. In such condition, abnormal dilation of airways causes excessive mucus production.

In Ayurvedic medicines, Vasaka is used for managing such condition. However, it has mild bronchodilator effects, but it has potent mucolytic and expectorant action. Therefore, the effect of its bronchodilatory properties becomes insignificant to cause further bronchodilatation. It helps to expel and coughing up the sputum and to clear the airways. Furthermore, it reduces chronic inflammation of airways, which helps to restore natural functions of the airways.

If the sputum is too thick and one feels difficult to expel it, then the mixture of 20 ml juice of Vasaka Leaves with 250 mg Black Salt (Kala Namak) is useful.

To reduce bronchodilatation, 3 grams Vasaka leaves powder is used with 50 mg Datura leaves powder and 1 teaspoon of honey.

1) *Sore Throat, Throat Pain, Tonsillitis & Postnasal Drip*

With medicinal properties like anti-inflammatory and antibacterial, antiviral, Adhatoda Vasica is helpful in a sore throat, throat pain and tonsillitis. It also reduces redness, pain, and inflammation of soft palate.

Patients with postnasal drip or discharge can get benefits using Vasaka leaves along with Sitopaladi churna and punarnava churna.

2) *Ulcer*

According to scientific study and analysis, *Adhatoda Vasica* has anti-ulcer property. Its leaves can reduce ulceration due to NSAIDs including aspirin. (8)

According to Ayurveda, it is beneficial in bleeding disorders and ulceration. It is also described in various ayurvedic ancient books including Charak Samhita.

It can help in peptic and duodenal ulcer. The following vasaka combination is used for this purpose.

<i>Adhatoda Vasica</i> Powder (Vasaka Churna)	1 gram
<i>Glycyrrhiza glabra</i> (Mulethi)	1 gram
<i>Asparagus</i> – Shatavari Churna	500 mg
<i>Banslochan</i>	500 mg
<i>Misri</i> (sugar)	1 gram

Dyspepsia, Gastritis or Acidity

Vasaka has good results in dyspepsia, gastritis or acidity. It reduces acid formation in the stomach. In the study, scientists have observed that it reduces free and total HCL in patients with non-ulcer dyspepsia, hyperacidity, and gastritis. (9)

Many herbalists use following Vasaka formula for hyper acidity and ulcer.

<i>Adhatoda Vasica</i> Powder (Vasaka Churna)	1 gram
<i>Glycyrrhiza glabra</i> (Mulethi)	1 gram
<i>Amla</i> Churna	500 mg
<i>Asparagus</i> – Shatavari Churna	500 mg
<i>Pitpapra</i> (<i>fumaria indica</i>)	500 mg
<i>Banslochan</i>	500 mg
<i>Misri</i> (sugar)	1 gram

Bleeding disorders

(Including nosebleed and internal bleeding)

The following formulation is used for bleeding disorders, cough, and asthma. It Is Described In Charaka Samhita (Chikitsa Sasthana, Chapter 4, Raktpitta, And Verse 65)

<i>Adhatoda</i> leaves juice	5 grams
<i>Vitis Vinifera</i>	5 grams
<i>Haritaki</i> (<i>Terminalia chebula</i>) Fruit pulp	5 grams

Take above herbs in described amount and make a decoction in 400 ml water, when 100 ml water remains during heating and let it cool down. Now add 1 teaspoon honey in decoction and drink twice a day.[13]

Gout or Raised Uric Acid Level

Adhatoda Vasica also reduces joint inflammation. With other herbs, it helps in reducing raised uric acid and pain and tenderness associated with gout. It is used with Giloy (*Tinospora cordifolia*) and amaltas (*Cassia fistula*) in gouty arthritis.

Uremia

Uremia is the condition with elevated urea level and nitrogenous wastes in the blood. It commonly occurs in acute renal injury and chronic renal failure. In such case, kidneys become unable to eliminate these toxic wastes.

Adhatoda Vasica root decoction is beneficial in decreasing the urea level and other nitrogenous wastes in the blood. How does it work is not yet known, but it increases the excretion of urea and other wastes through the urine. 50 ml *Adhatoda Vasica* root decoction is effective in initial or starting phase of chronic renal failure when used along with Chandraprabha Vati on the empty stomach. The results start appearing within the first week of the treatment.

Excessive Uterine Bleeding

10 ml Vasaka juice or 50 ml Vasaka decoction along with 10 grams Misri powder is beneficial for treating excessive uterine bleeding. The treatment duration with this remedy should be continued at least for 4 to 6 weeks. Chandraprabha Vati should also be used with this remedy for restoring natural uterine functions.[12]

Conclusions

The different parts of Vasaka herb have following recommended dosage.

Vasaka leaves	1 gram to 3 grams
Leaf Decoction	Prepared with 5 grams leaf powder
Vasaka roots	250 mg to 500 mg
Vasaka Leaf juice	5 ml to 10 ml
Vasaka flower powder	250 mg to 1000 mg

All parts of *Adhatoda Vasica* or Vasaka are likely safe to consume as per dosage described above.

3) Side effects of Vasaka (*Adhatoda Vasica*)

There are no side effects observed with *Adhatoda Vasica* or Vasaka when it is used in a natural form including leaf powder, leaf juice, decoction etc.

4) Pregnancy & Lactation

Adhatoda Vasica has studied for its abortive effects in rats. In this study, leaf extract was used, which has Standard Vasicine alkaloid about 0.85%. *Adhatoda vasica* did not cause abortion in any group treat with it.

However, there is no study available for the crude form of Vasaka safety in breastfeeding and pregnancy. In Ayurveda, *Adhatoda Vasica* is used during pregnancy to reduce symptoms of nausea, vomiting, acidity along with ginger. Therefore, it might be safe during pregnancy and breastfeeding for short-term use. The long-term use should be discouraged.[13]

References

1. Sen JN, Ghosh TP. J Indian Chem Soc 1925;1:315-20
2. Snell FD, Snell CT. In: Colourimetric methods of analysis. New York: Van Nonstrand Reinold Company; 1970. p. 528
3. Wakhloo RL, Wakhloo D, Gupta OP, Atal CK. J Obstet Gynaecol (India) 1979; 29: 939-40.
4. Doshi JJ, Patel VK, Bhatt HV. Int J Crude Drug Res 1983; 21: 173-6.
5. Mathew AS, Patel KN, Shah BK. Indian J Nat Prod 1998; 14: 11-6.
6. Dhuley JN. J Ethnopharmacol 1999; 67: 361-5.
7. Shrivastava N, et al. J Herb Pharmacother. 2006; 6(2):43-49.
8. Pandita K. Planta Med. 1983; 48: 81-82.
9. Atal CK. Chemistry and Pharmacology of vasicine - A new oxytocic and abortifacient, New Delhi. 1980: p.58.
10. Atal CK, et al. Ind J Exp Biol. 1982; 20: 704-09.
11. Indian Herbal Pharmacopoeia (Revised new edition). Mumbai, India: Indian Drug Manufacturing Association; 2002. p. 33-9.
12. Joshi JJ, et al. Int. J. Crude Drug Res. 1983; 21: 173.
13. Rajani M, Bhavsar GC. Indian Drugs 1993; 30: 87-8.